

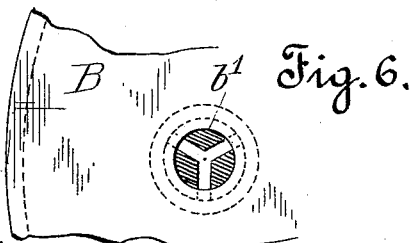
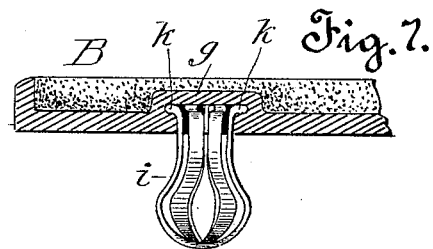
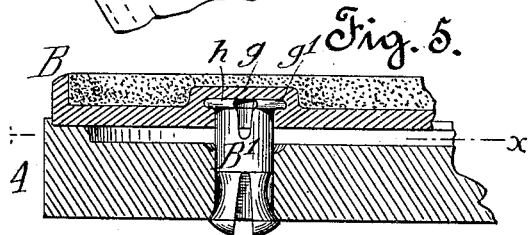
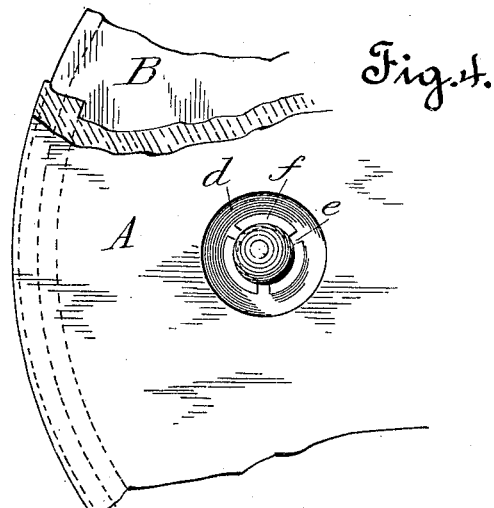
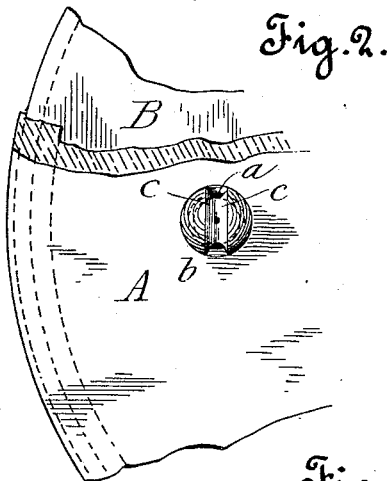
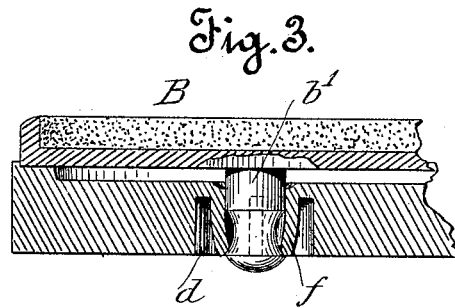
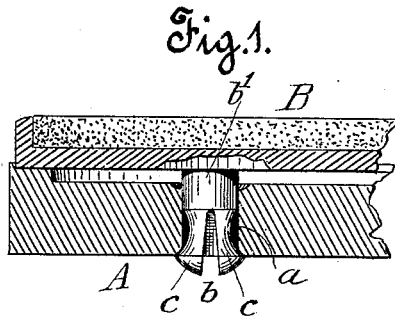
No. 646,843.

E. KRAHENBUHL.
WATCH DIAL.

Patented Apr. 3, 1900.

(Application filed Oct. 6, 1897.)

(No Model.)



Witnesses.
W. Monteverde
M. K. Kelly



Inventor.
Fig. 8. *E. Krahenbuhl*
by *Spears & Seely*
Attorneys

UNITED STATES PATENT OFFICE.

ERNEST KRAHENBUHL, OF SAN RAFAEL, CALIFORNIA.

WATCH-DIAL.

SPECIFICATION forming part of Letters Patent No. 646,843, dated April 3, 1900.

Application filed October 6, 1897. Serial No. 654,315. (No model.)

To all whom it may concern:

Be it known that I, ERNEST KRAHENBUHL, a citizen of Switzerland, (but having declared my intention of becoming a citizen of the United States,) residing at San Rafael, in the county of Marin and State of California, have invented certain new and useful Improvements in Attaching Watch-Dials; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention is a simple and novel means of attaching the dials to the movement-plates of watches in such a manner that they can be easily removed from the front, and consequently without taking out the movement, as has usually been necessary, and without loosening or removing screws from inside or outside. My construction comprises a spring connection between the dial and movement-plate, which besides holding the parts securely but removably will also accurately locate and center the dial immovably. Such a spring connection can be made in different ways, some of which I have hereinafter described and have also illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of part of a movement-plate and dial showing a spring connection comprising a split stud attached to the dial and engaging with a hole in the movement-plate. Fig. 2 is a bottom plan of the same. Fig. 3 is a similar section showing a spring connection comprising a solid stud on the dial engaging with spring-tongues formed within a recess in the movement-plate. Fig. 4 is a bottom plan of the same. Fig. 5 is a similar section showing a doubly-split stud, compressible or elastic at both ends and removably secured within a recess in the dial and engaging with a hole in the movement-plate. Fig. 6 is a section on the line xx of Fig. 5, looking at the lower surface of the dial. Fig. 7 is a section of a dial, showing another form of insertible and removable spring-stud in position within a recess in a dial like that of Fig. 5. Fig. 8 is a plan view of the stud shown in Fig. 7.

Referring to Figs. 1 and 2, A represents the movement-plate of a watch, and B is the dial, which may be of any kind, style, or construction. Secured to the dial is the dial foot or stud b , which is one of a series of three or

more of such feet secured near its circumference and which are all of the same construction. The stud has a plain cylindrical form, as shown at b' , for a portion of its length, which has a parallel bearing in the hole a of the movement-plate. Below this bearing and thence to the end the stud is split or cut out longitudinally, so as to form arms c , which are elastic, with a tendency to spring outwardly or away from each other. The hole a extends through the plate A, and its edges are slightly beveled or countersunk at the top to render it easier to insert the stud, and at the bottom to permit the inclined edge of the stud to take a bearing upon the edge of the hole. The stud below the plain parallel bearing referred to is preferably reduced in size, as shown, by compression or otherwise, enlarging again at the extreme end. This gives it greater elasticity and also makes a more secure hold, because the extreme end of the spring-arms can project a little and bear upon the countersunk edge.

In Figs. 3 and 4 of the drawings I have shown another way of making a spring connection between a dial and movement-plate. In this case the stud on the dial may be shaped like that shown in Fig. 1, but may be made solid, while the dial-foot hole in the plate is surrounded by a recess d , leaving a thickness of metal which when cut through, as shown at e , forms a number of spring-tongues f , which tend to meet inwardly. The stud is forced between these tongues and engages them in a manner which is just the reverse in action but the clear equivalent of the devices shown in Fig. 1.

In Figs. 5 and 6 still another modification is shown, embodying the primary idea of the invention. I design by this construction to make the dial-feet attachable to and removable from the dial, and also to adapt a dial manufactured separately to fit and be attached to all standard movements. For this purpose I form in the material of the dial or in the cup or plate which holds the enamel sinks or depressions g , having a hole to receive the dial-foot, which hole is enlarged at the bottom by a groove g' . The dial-foot B' is in this case split at each end, and its upper end is formed with a flange h , which fits

the widened part of the hole in the dial. The lower end, which engages with the movement-plate, is formed like Fig. 1. In making dials of this kind I design to provide as many of these depressions *g* as may be required to enable me to fit dial-feet for all standard movements, so that the dials may be made and sold separately and be universally applicable. It will be seen by referring to Fig. 5 that the split in the flanged end of the dial-foot extends a little below the base of the dial. This enables the dial-foot to be cut off even with such base, so that the flanged end can be removed in separate pieces previous to inserting a new foot. As one substitute for the dial-foot shown in Fig. 5 when removed, as described, or for ordinary use, I have embodied my invention in another construction, (shown in Figs. 7 and 8,) in which a circular blank of spring metal is formed into spring-tongues *i* by removing sector-shaped pieces of metal, as shown, and bending the resulting radial arms into the shape shown, the ends of the arms being finally bent at an abrupt angle *k* to enter and fit the groove *g'*. The compression of these arms into the hole in the dial produces the effect of an expansion below the dial, which engages with the movement-plate in the same manner as the other spring dial-feet before described.

In all the forms shown the tendency of the lateral expansion of the spring-arms is to draw the dial and plate together in the longitudinal line of the foot, and this is caused in a great measure by the reduced size of the foot below its plain parallel bearing in the dial-hole. Hence I prefer always to so reduce the dial-foot and leave a space between it and the wall of the dial-hole in order to permit this expansion to take effect to the greatest possible degree and produce this action of drawing the two parts together. Otherwise if a plain parallel dial-foot were split in the same way and forced into the hole the effect would be wholly lateral and

the parts would be held together by friction only instead of being positively drawn together. It follows that in reconstructing old dial-feet already in position in the dial I prefer to compress the same to about the shape of the foot shown in Fig. 1 and then split them. It is, however, practical under my invention to split a plain parallel dial-foot and so attach it removably to the movement-plate, the frictional contact being greatly strengthened by the spring-pressure.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a watch-plate having a hole through the same, and a dial-plate, of a foot secured to the dial-plate, adapted to extend entirely through the hole in the watch-plate, said foot having a spring end adapted to spread, the outer periphery of said end having a concave part, the edge of the wall of the hole in the watch-plate finding a bearing in the concave surface of the foot.

2. In combination, the watch-plate having a hole extending therethrough, a dial-plate, and a dial-foot having spring ends detachably secured at one end in said dial-plate and at its opposite end in said watch-plate.

3. In combination with a watch-plate, having a hole entirely through the same, a dial having an opening therein leading to a grooved or enlarged portion, and a dial-foot slotted at one end to form spring-tongues with shoulders adapted to engage said grooved portion and having its other end slotted to form spring-tongues to engage the watch-plate, substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 31st day of August, 1897.

ERNEST KRAHENBUHL.

Witnesses:

L. W. SEELY,
H. J. LANG.